IN THE CLAIMS:

1.-3. (CANCELLED)

4. (CURRENTLY AMENDED) A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway;

a mixer receiving said second end portion, said mixer including a dilution gas passageway for carrying a dilution gas with said dilution gas passageway in communication with said sample exhaust gas passageway for introducing dilution gas to the exhaust gas~~The sampler according to claim 1~~, wherein the mixer includes an end cap arranged about the second end portion removably secured to said transfer tube assembly and said mixer; and

a tunnel connected to said mixer and including a gas mixing passageway extending a length for homogeneously mixing the gases together with a mixing orifice arranged between said second end portion and said gas mixing passageway, and the exhaust gas and the dilution gas commingling prior to flowing through said orifice to said gas mixing passageway.

5.-6. (CANCELLED)

7. (CURRENTLY AMENDED) ~~The sampler according to claim 1~~A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an

outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway, wherein said probe is approximately ¼ inch in diameter;

a mixer receiving said second end portion, said mixer including a dilution gas passageway for carrying a dilution gas with said dilution gas passageway in communication with said sample exhaust gas passageway for introducing dilution gas to the exhaust gas; and

a tunnel connected to said mixer and including a gas mixing passageway extending a length for homogeneously mixing the gases together with a mixing orifice arranged between said second end portion and said gas mixing passageway, and the exhaust gas and the dilution gas commingling prior to flowing through said orifice to said gas mixing passageway.

8.-11. (CANCELLED)

12. (CURRENTLY AMENDED) ~~The sampler according to claim 8~~A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway, wherein said probe is approximately ¼ inch in diameter; and

a mixer receiving said second end portion and having a portion arranged concentrically thereabout forming a dilution gas chamber, said mixer including a dilution gas passageway arranged between said first and second end portions for carrying a dilution gas to said dilution gas chamber.

13.-14. (CANCELLED)

15. (CURRENTLY AMENDED) ~~The sampler according to claim 1~~A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway;

a mixer receiving said second end portion, said mixer including a dilution gas passageway for carrying a dilution gas with said dilution gas passageway in communication with said sample exhaust gas passageway for introducing dilution gas to the exhaust gas, wherein said mixer includes a portion forming a dilution gas chamber, said dilution gas chamber surrounding at least a portion of said outer tube radially outwardly of said outer tube and between said first and second end portions, said dilution gas passageway defined by at least one feed tube for carrying a dilution gas to said dilution gas chamber; and

a tunnel connected to said mixer and including a gas mixing passageway extending a length for homogeneously mixing the gases together with a mixing orifice arranged between said second end portion and said gas mixing passageway, and the exhaust gas and the dilution gas commingling prior to flowing through said orifice to said gas mixing passageway.

16. (CURRENTLY AMENDED) ~~The sampler according to claim 8~~A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway; and

a mixer receiving said second end portion and having a portion arranged concentrically thereabout forming a dilution gas chamber, said mixer including a dilution gas passageway arranged between said first and second end portions for carrying a dilution gas to said dilution gas chamber, wherein said mixer includes a portion forming a dilution gas chamber, said dilution gas chamber surrounding at least a portion of said outer tube radially outwardly of said outer tube and between said first and second end portions, said dilution gas passageway defined by at least one feed tube for carrying a dilution gas to said dilution gas chamber.

17. (CURRENTLY AMENDED) ~~The sampler according to claim 14~~A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion; and

a mixer receiving said second end portion and having a portion forming a dilution gas chamber, said mixer including a dilution gas passageway defined by spaced apart first and second feed tubes for carrying a dilution gas to said dilution gas chamber, said feed tubes having outlets arranged between the first and second end portions, wherein said second end includes a terminal end from which undiluted exhaust gas exits, the dilution gas exiting said outlets upstream from said terminal end.

18.-19. (CANCELLED)

20. (CURRENTLY AMENDED) ~~The sampler according to claim 14, wherein~~ A particulate sampler for use in analyzing particulate matter in exhaust gas from an emissions source, said sampler comprising:

a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway having a first end portion with an opening for receiving the exhaust gas from the emissions source and extending to a second end portion, said transfer tube assembly includes an

outer tube surrounding at least a portion of said probe to define an insulator cavity to maintain a temperature of the exhaust gas in said sample exhaust gas passageway;

a mixer receiving said second end portion and having a portion forming a dilution gas chamber, said mixer including a dilution gas passageway defined by spaced apart first and second feed tubes for carrying a dilution gas to said dilution gas chamber, said feed tubes having outlets arranged between the first and second end portions; and

a temperature sensor is arranged in close proximity to said probe, said sensor determining whether the sample exhaust gas is maintained at said temperature by said insulator cavity.